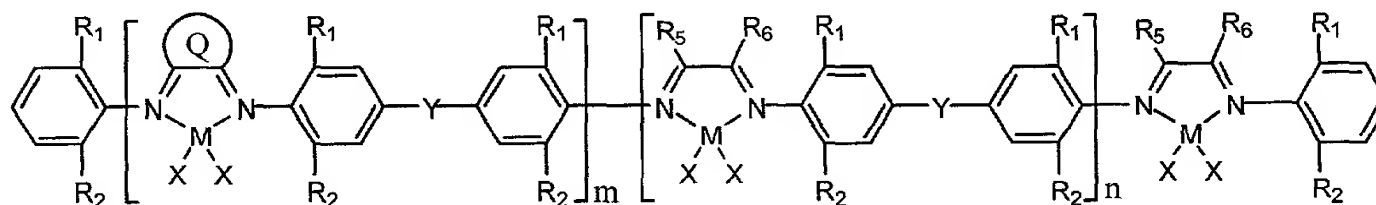
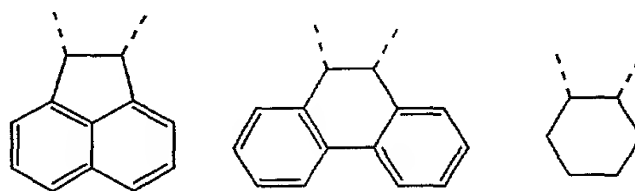


We claim:

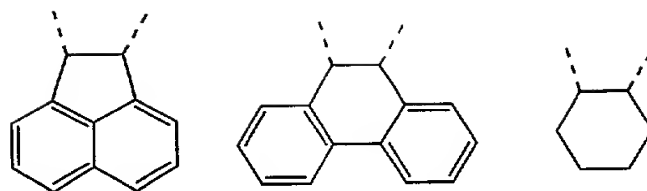
1. A polynuclear α -diimine Ni(II) complex used as the precursor of the catalyst in polymerizing polyolefine, represented by the following formula:



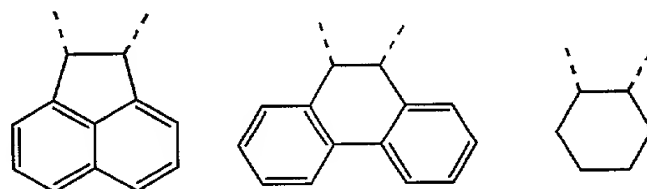
wherein M is Ni; X is Cl or Br; m and n is independently an integer from 0 to 100, respectively; R₁ and R₂ is the same or different, and is selected from the group consisting of H, methyl, ethyl, isopropyl and tert-butyl; Y is CR₃R₄, wherein R₃ and R₄ is the same or different, and is selected from the group consisting of H, methyl, ethyl, propyl, butyl and phenyl, or R₃ and R₄ forming a cyclic alkyl group; R₅ and R₆ is the same or different, and is selected from the group consisting of methyl, ethyl, propyl and heterocyclic group; Q is a cyclic divalent residual group of the following formula or a mixture thereof:



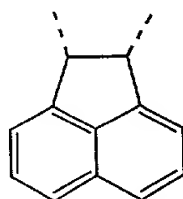
2. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, M is Ni; X is Cl or Br; m is an integer from 0 to 100, n is 0; R₁ and R₂ is the same or different, and is selected from the group consisting of H, methyl, ethyl, isopropyl and tert-butyl; Y is CR₃R₄, wherein R₃ and R₄ is the same or different and is selected from the group consisting of H, methyl, ethyl, propyl, butyl and phenyl, or R₃ and R₄ forming a cyclic alkyl group; Q is a cyclic divalent residual group of the following formula or a mixture thereof:



3. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is an integer from 1 to 20, n is 0; R_1 is isopropyl, R_2 is methyl or isopropyl; Y is CR_3R_4 , wherein R_3 and R_4 is the same and is H or methyl, or R_3 and R_4 forming a cyclohexyl group; Q is a cyclic divalent residual group of the following formula or a mixture thereof:



4. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is an integer from 1 to 10, n is 0; R_1 is isopropyl, R_2 is methyl or isopropyl; Y is CR_3R_4 , wherein R_3 and R_4 is the same and is H or methyl, or R_3 and R_4 forming a cyclohexyl group; Q is a cyclic divalent residual group of the following formula:



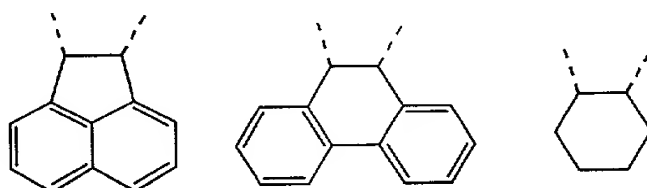
5. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, M is Ni; X is Cl or Br; m is 0, n is an integer from 1 to 100; R_1 and R_2 is the same or different and is selected from the group consisting of H, methyl, ethyl, isopropyl and tert-butyl; Y is CR_3R_4 , wherein R_3 and R_4 is the same or different and is selected from the group consisting of H, methyl, ethyl, propyl, butyl and phenyl, or R_3 and R_4 forming a cyclic alkyl group; R_5 and R_6 is the same or different and is selected from the group consisting of methyl, ethyl, isopropyl and

heterocyclic group.

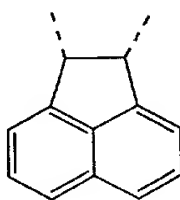
6. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is 0, n is an integer from 1 to 30; R_1 is isopropyl, R_2 is methyl or isopropyl; Y is CR_3R_4 , where R_3 and R_4 is the same, and is H or methyl, or, R_3 and R_4 forming a cyclohexyl group; R_5 and R_6 is methyl.

7. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is 0, n is an integer from 1 to 20; R_1 and R_2 is isopropyl; Y is CR_3R_4 , where R_3 and R_4 is the same, and is H or methyl; R_5 and R_6 is methyl.

8. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is an integer from 1 to 10, n is an integer from 1 to 20; R_1 is isopropyl, R_2 is methyl or isopropyl; Y is CR_3R_4 , where R_3 and R_4 is the same, and is H or methyl, or R_3 and R_4 forming a cyclohexyl group; R_5 and R_6 is methyl; Q is a cyclic divalent residual group of the following formula:

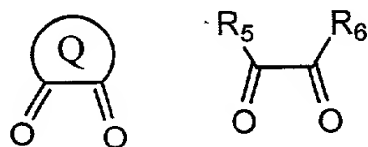


9. A polynuclear α -diimine Ni(II) complex of claim 1, wherein, X is Br; m is an integer from 1 to 10, n is an integer from 1 to 20; R_1 and R_2 is methyl; Y is CR_3R_4 , where R_3 and R_4 is the same, and is H or methyl; R_5 and R_6 is methyl; Q is a cyclic divalent residual group of the following formula:

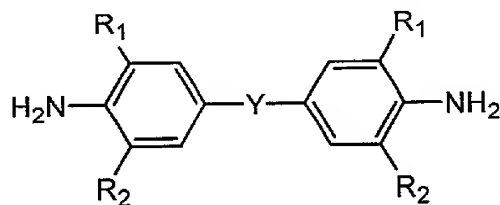


10. A method for the preparation of the polynuclear α -diimine Ni(II) complex of claim 1, comprising the steps of:

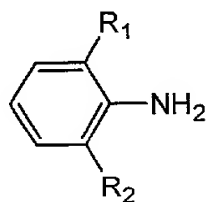
(a) condensing an α -diketone represented by the formula or a mixture thereof,



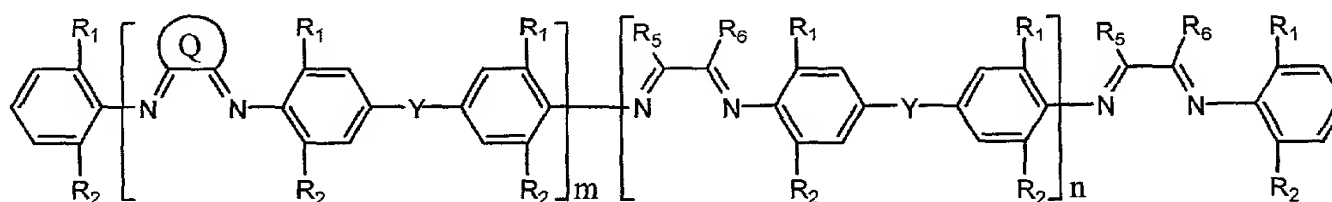
wherein, Q, R₅ and R₆ have the same definition in claim 1,
a substituted aromatic diamine represented by the formula



wherein, R₁, R₂ and Y are as defined in claim 1,
and a substituted aromatic amine represented by the formula

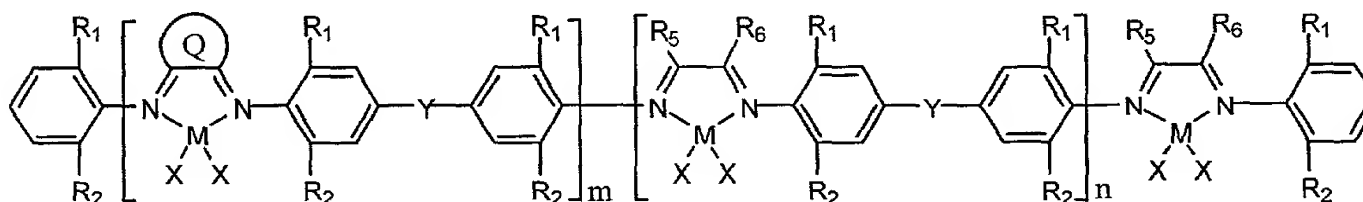


wherein, R₁ and R₂ are as defined in claim 1,
in a medium of alcohol, aromatic hydrocarbon, alcohol-ether mixture, or alcohol-halogenated hydrocarbon mixture and under the catalytic action of HCOOH, CF₃COOH or HX, wherein X is F, Cl, Br, or I;
thereby obtaining an oligomer of substituted α -diimine of the formula



wherein, R_1 , R_2 , R_5 , R_6 , Q , Y , m and n have the same definition in claim 1;

(b) carrying out coordination reaction of the oligomer of step (a) with NiX_2 , wherein X is Cl or Br , in the absence of water and oxygen, thereby obtaining a polynuclear α -diimino $Ni(II)$ complex of the following formula:



wherein, R_1 , R_2 , R_5 , R_6 , Q , Y , M , X , m and n have the same definition in claim 1.

11. A method for preparing polyethylene, comprising the step of using the polynuclear α -diimine $Ni(II)$ complex of claim 1 as the precursor of the catalyst.